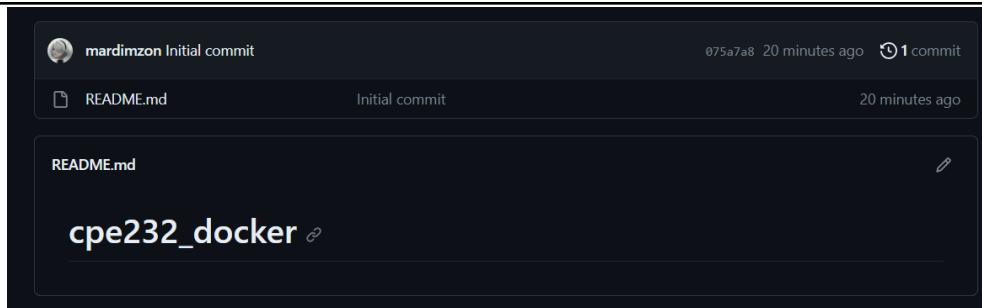| Name: Dimzon , Mark Allen Rhoy	Date Performed:11/13/23
Course/Section: CPE31S4	Date Submitted:11/13/23
Instructor: Dr. Jonathan V. Taylar	Semester and SY: 1st Sem 23-24

<div align="center">

Activity 11: Containerization

</div>

1. Objectives

Create a Dockerfile and form a workflow using Ansible as Infrastructure as Code (IaC) to enable Continuous Delivery process

2. Discussion

Docker is an open platform for developing, shipping, and running applications. Docker enables you to separate your applications from your infrastructure so you can deliver software quickly. With Docker, you can manage your infrastructure in the same ways you manage your applications. By taking advantage of Docker's methodologies for shipping, testing, and deploying code quickly, you can significantly reduce the delay between writing code and running it in production.

Source: https://docs.docker.com/get-started/overview/

You may also check the difference between containers and virtual machines. Click the link given below.

Source: https://docs.microsoft.com/en-us/virtualization/windowscontainers/about/containers-vs-vm

3. Tasks

1. Create a new repository for this activity.
2. Install Docker and enable the docker socket.
3. Add to Docker group to your current user.
4. Create a Dockerfile to install web and DB server.
5. Install and build the Dockerfile using Ansible.
6. Add, commit and push it to your repository.

4. Output (screenshots and explanations)

Create a new repository for this activity.

used command tree to track what will be the process of installation


```
dimzon@localmachine:~/cpe232_docker$ tree
.
├── defaults
│   └── main.yml
├── files
│   ├── dockerfile
│   └── Dockerfile
├── installdocker.retry
├── installdocker.yml
├── README.md
└── roles
    ├── centosdocker
    │   └── tasks
    └── ubuntudocker
        └── tasks
            ├── configure.yml
            ├── install.yml
            └── main.yml
```

Install Docker and enable the docker socket.

```
- name: Uninstall old Docker versions
  apt:
    name:
      - docker
      - docker-engine
      - docker.io
      - containerd
      - runc
    state: absent

- name: Creating a directory for packages
  file:
    path: /home/dimzon/docker-deb
    state: directory

- name: install required system packages
  apt:
    pkg:
      - apt-transport-https
      - ca-certificates
      - curl
      - software-properties-common
      - python3-pip
      - virtualenv
      - python3-setuptools

- name: Add Docker gpg apt key
  apt_key:
    url: https://download.docker.com/linux/ubuntu/gpg
    state: present

- name: add docker repo
```

```
    repo: deb https://download.docker.com/linux/ubuntu bionic stable

- name: Ensure group docker exists
  group:
    name: docker
    state: present

- name: Adding docker to the group of the current user
  user:
    name: dimzon
    groups: docker
    append: yes

- name: Start docker services
  service:
    name: '*'
    state: started
  with_items:
    - docker
    - containerd

- name: Install python
  apt:
    name: python3-pip

- block:
  - name: Verifying docker service
    shell: systemctl list-unit-files | grep docker
    register: docker_service

  - debug:
      msg="{{ docker_service }}"
```

Add to Docker group to your current user

```
File Edit View Search Terminal Help
  GNU nano 2.9.3                                                    configure.yml


- name: Creating a directory for Dockerfile
  file:
     path: /home/dimzon/docker_config
     state: directory

- name: Copying the Dockerfile
  copy:
     src: Dockerfile
     dest: /home/dimzon/docker_config
     owner: dimzon
     group: dimzon

- name: Creating volume
  file:
     path: /home/dimzon/pages
     state: directory
```

Create a Dockerfile to install web and DB server.

```
File Edit View Search Terminal Help
  GNU nano 2.9.3                                                    Dockerfile

FROM ubuntu:latest
MAINTAINER dimzon <qmardimzon@tip.edu.ph>

ARG DEBIAN_FRONTEND=noninteractive

RUN apt-get update -y
RUN apt-get upgrade -y

RUN apt-get install apache2 -y
RUN apt-get install php libapache2-mod-php -y
RUN apt-get install mariadb-server mariadb-client -y

RUN /etc/init.d/apache2 start

ENTRYPOINT apache2ctl -D FOREGROUND
```

```
                         dimzon@localmachine: ~/cpe232_docker/defaults
File Edit View Search Terminal Help
  GNU nano 2.9.3                                          main.yml
---
  docker_apps:
    containerd: containerd.io_1.6.9-1_amd64
    docker_ce_cli: docker-ce-cli_20.10.21~3-0~ubuntu-jammy_amd64
    docker_ce: docker-ce_20.10.21~3-0~ubuntu-jammy_amd64
    docker_compose: docker-compose-plugin_2.6.0~ubuntu-jammy_amd64
```

Reflections:

Answer the following:

1. What are the benefits of implementing containerizations?

Conclusions: